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October 18, 2005 (Revised)

Ms. Karen Tork
1471 Rainbow Valley Blvd.
Rainbow, CA 92028

RE: ACOUSTICAL SITE ASSESSMENT
OLD SAN MARCOS SCHOOLHOUSE– SAN MARCOS CA
ISE REPORT #05-085

Dear Ms. Tork:

At your request, Investigative Science and Engineering (ISE) have performed an acoustical site assessment of the proposed Old San Marcos Schoolhouse project located in the City of San Marcos, California. The results of that survey, as well as predicted future noise levels at the project site, are presented in this letter report.

INTRODUCTION AND DEFINITIONS

Existing Site Characterization

The proposed Old San Marcos Schoolhouse site is triangular-shaped and consists of approximately 2.87 acres located in the City of San Marcos. The project site is located at 236 Deer Springs Road, within the County of San Diego. Interstate 15 (I-15) provides regional access to the project area (refer to Figure 1).

The project site is generally flat with an existing natural ground contour with elevations that range between 725-feet to 730-feet above mean sea level (MSL). The property rises gently to the west backyard at approximately 3% slope to an elevation of 736 feet above MSL. The site currently contains an existing corral, barn, shed, and fenced orchard.

Project Description

The proposed Old San Marcos Schoolhouse project will maintain size and location of all existing uses, buildings, and landscape areas on the project site. The existing schoolhouse has total building square footage of 2,030 SF and has covered outdoor patio area well. An aerial photograph of the project area and surrounding community is shown in Figure 2 on Page 3.

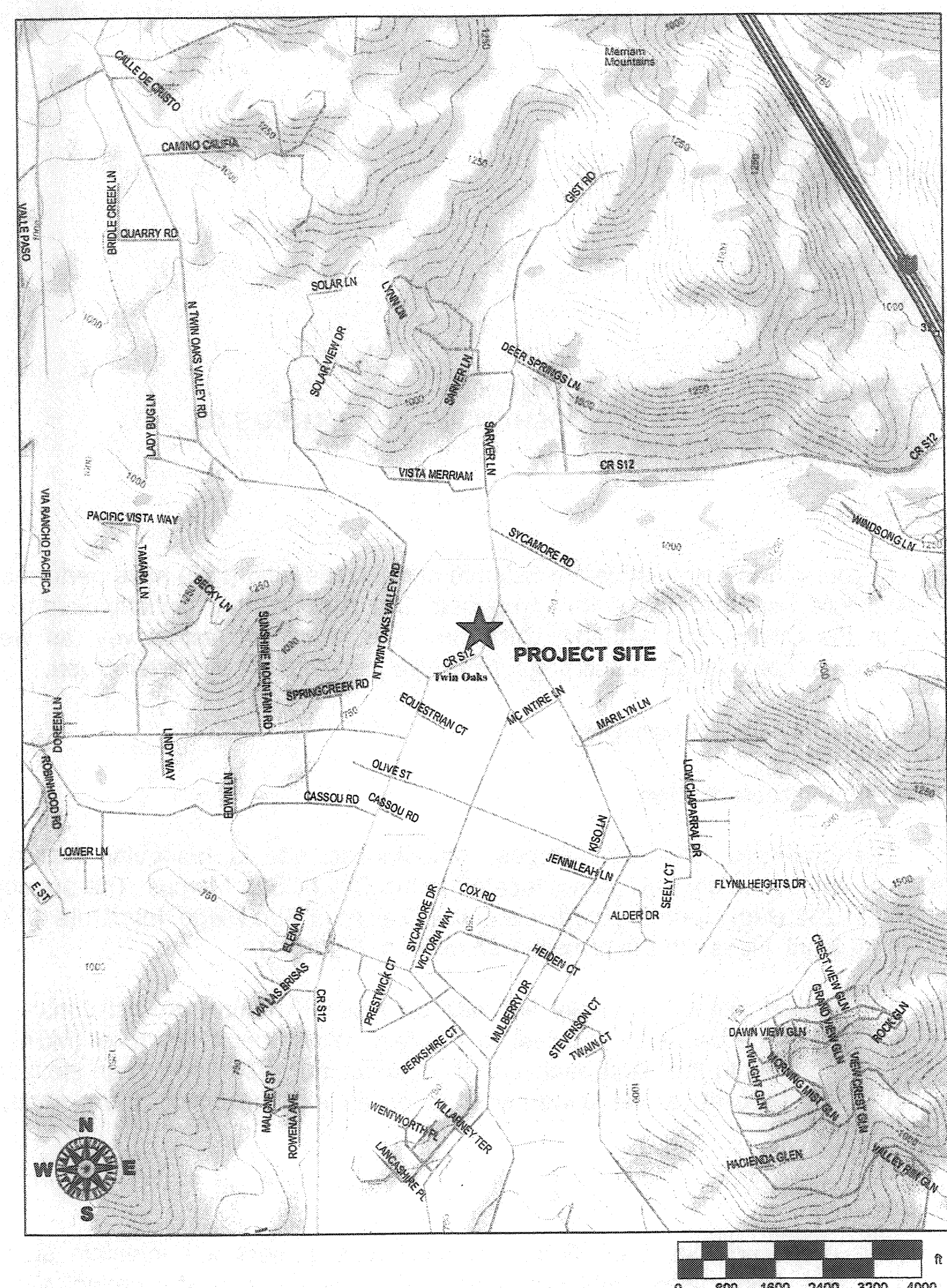


Figure 1: Project Vicinity Map – Old San Marcos Schoolhouse (ISE, 7/05)

Figure 2: Project Site Aerial Photograph – Old San Marcos Schoolhouse – (*©AirPhoto USA, 1/01*)

The project proposes weddings and special events scheduled on weekends with operating hours form 8:00 am to 9:30 pm. The proposed events would be expected to have as many as 150 guests and 12 staff members *(Source: Old San Marcos Comment Letter - 10/22/03)*. The propose project does not have any mechanical equipment or noise generators onsite and does not propose any in the future. A site plan for the existing Old San Marcos Schoolhouse is shown in Figure 3 below.

Acoustical Definitions

Sound waves are linear mechanical waves. They can be propagated in solids, liquids, and gases. The material transmitting such a wave oscillates in the direction of propagation of the wave itself. Sound waves originate from some sort of vibrating surface. Whether this surface is the vibrating string of a violin or a person's vocal cords, a vibrating column of air from an organ or clarinet, or a vibrating panel from a loudspeaker, drum, or aircraft, the sound waves generated are all similar. All of these vibrating elements alternatively compress the surrounding air on a forward movement and expand it on a backward movement.

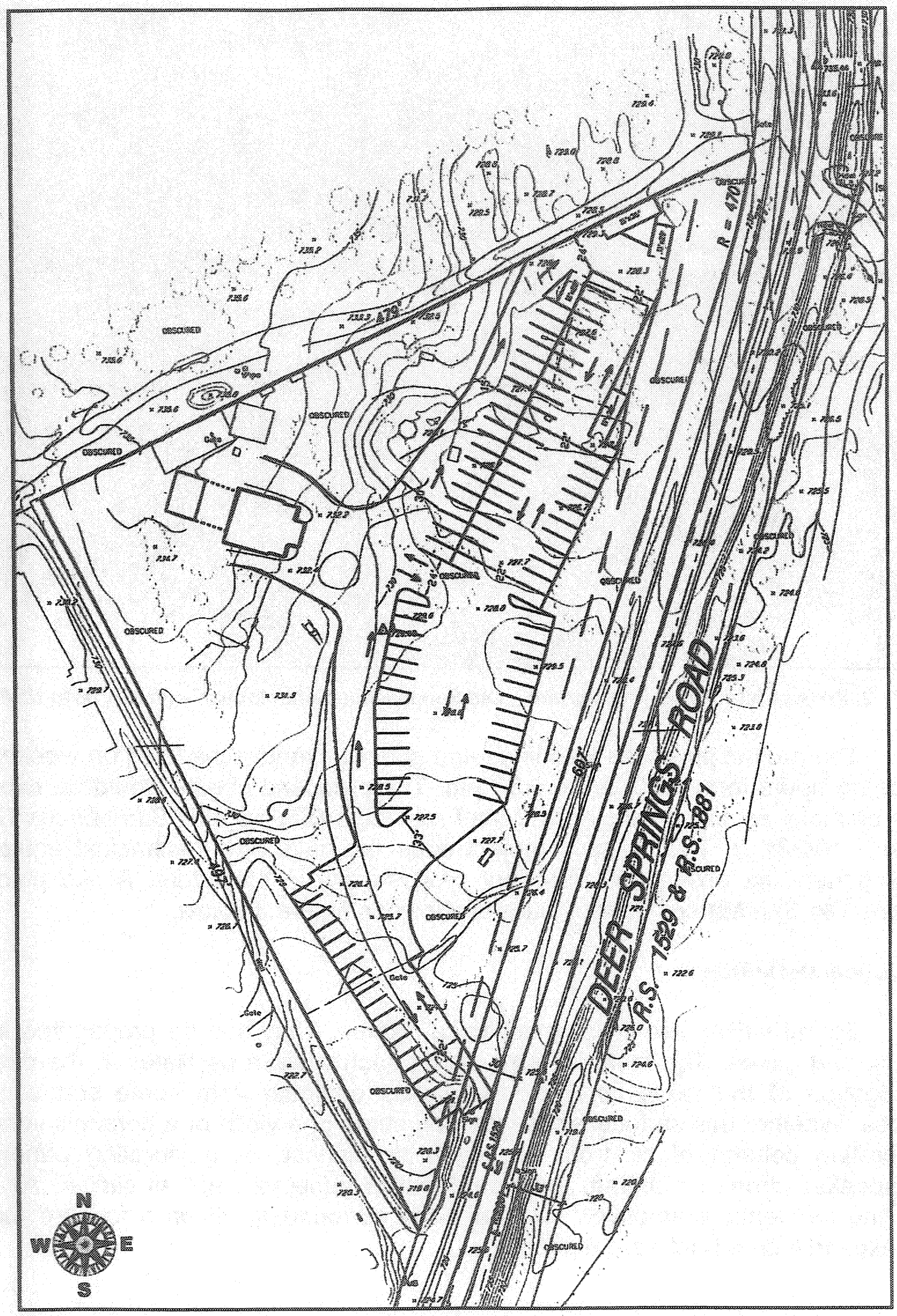


Figure 3: Proposed Site Plan – Old School House Site Plan (Graves Engineering, 2005)

There is a large range of frequencies within which linear waves can be generated, sound waves being confined to the frequency range that can stimulate the auditory organs to the sensation of hearing. For humans this range is from about 20 Hertz (Hz or cycles per second) to about 20,000 Hz. The air transmits these frequency disturbances outward from the source of the wave. Sound waves, if unimpeded, will spread out in all directions from a source. Upon entering the auditory organs, these waves produce the sensation of sound. Waveforms that are approximately periodic or consist of a small number of periodic components can give rise to a pleasant sensation (assuming the intensity is not too high), for example, as in a musical composition. Noise, on the other hand, can be represented as a superposition of periodic waves with a large number of components.

Noise is generally defined as unwanted or annoying sound that is typically associated with human activity and which interferes with or disrupts normal activities. Although exposure to high noise levels has been demonstrated to cause hearing loss, the principal human response to environmental noise is annoyance. The response of individuals to similar noise events is diverse and influenced by the type of noise, the perceived importance of the noise and its appropriateness in the setting, the time of day, and the sensitivity of the individual hearing the sound.

Airborne sound is a rapid fluctuation of air pressure above and below atmospheric levels. The loudest sounds that the human ear can hear comfortably are approximately one trillion (or 1×10^{12}) times the acoustic energy that the ear can barely detect. Because of this vast range, any attempt to represent the acoustic intensity of a particular sound on a linear scale becomes unwieldy. As a result, a logarithmic ratio originally conceived for radio work known as the decibel (dB) is commonly employed.

A sound level of zero "0" dB is scaled such that it is defined as the threshold of human hearing and would be barely audible to a human of normal hearing under extremely quiet listening conditions. Such conditions can only be generated in anechoic or "dead rooms". Typically, the quietest environmental conditions (extreme rural areas with extensive shielding) yield sound levels of approximately 20 dB. Normal speech has a sound level of approximately 60 dB. Sound levels above 120 dB roughly correspond to the threshold of pain and would be associated with sources such as jet engine noise or pneumatic equipment.

The minimum change in sound level that the human ear can detect is approximately 3 dB. A change in sound level of 10 dB is usually perceived by the average person as a doubling (or halving) of the sounds loudness. A change in sound level of 10 dB actually represents an approximate 90 percent change in the sound intensity, but only about a 50 percent change in the perceived loudness. This is due to the nonlinear response of the human ear to sound.

As mentioned above, most of the sounds we hear in the environment do not consist of a single frequency, but rather a broad band of frequencies differing in sound level. The intensities of each frequency add to generate the sound we hear. The method commonly used to quantify environmental sounds consists of determining all of the frequencies of a sound according to a weighting system that reflects the nonlinear response characteristics of the human ear. This is called "A" weighting, and the decibel level measured is called the A-weighted sound level (or dBA). In practice, the level of a noise source is conveniently measured using a sound level meter that includes a filter corresponding to the dBA curve.

Although the A-weighted sound level may adequately indicate the level of environmental noise at any instant in time, community noise levels vary continuously. Most environmental noise includes a conglomeration of sounds from distant sources that create a relatively steady background noise in which no particular source is identifiable. For this type of noise, a single descriptor called the Leq (or equivalent sound level) is used. Leq is the energy-mean A-weighted sound level during a measured time interval. It is the 'equivalent' constant sound level that would have to be produced by a given source to equal the average of the fluctuating level measured. For most acoustical studies, the study interval is generally taken as one-hour and is abbreviated *Leq-h*; however, other time intervals are utilized depending on the jurisdictional preference.

To describe the time-varying character of environmental noise, the statistical noise descriptors L10, L50, and L90 are commonly used. They are the noise levels equaled or exceeded during 10 percent, 50 percent, and 90 percent of a stated time. Sound levels associated with the L10 typically describe transient or short-term events, while levels associated with the L90 describe the steady state (or most prevalent) noise conditions. In addition, it is often desirable to know the acoustic range of the noise source being measured. This is accomplished through the maximum and minimum measured sound level (Lmax and Lmin) indicators. The Lmin value obtained for a particular monitoring location is often called the *acoustic floor* for that location.

Finally, another sound measure employed by the State of California and the County of San Diego is known as the Community Noise Equivalence Level (CNEL) is defined as the "A" weighted average sound level for a 24-hour day. It is calculated by adding a 5-decibel penalty to sound levels in the evening (7:00 p.m. to 10:00 p.m.), and a 10-decibel penalty to sound levels in the night (10:00 p.m. to 7:00 a.m.) to compensate for the increased sensitivity to noise during the quieter evening and nighttime hours.

◆ APPLICABLE SIGNIFICANCE CRITERIA

County of San Diego Operational Noise Standards

The San Diego County Noise Ordinance Section 36.404 governs fixed source and/or operational noise. The applicable sound levels are a function of the time of day and the land use zone. Sound levels are measured at the boundary of the property containing the noise source. The relevant limits are given below in Table 1. In the case where two adjacent property lines differ in zoning, the applicable threshold would be the arithmetic average of the two standards.

TABLE 1: County of San Diego Noise Ordinance Limits

Land Use Zone	Time of Day	1-Hour Average Sound Level (dBA Leq)
R-S, R-D, R-R, R-MH, A-70, A-72, S-80, S-81, S-87, S-88, S-90, S-92, R-V, and R-U	7 a.m. to 10 p.m. 10 p.m. to 7 a.m.	50 45
R-R0, R-C, R-M, C-30, and S-86	7 a.m. to 10 p.m. 10 p.m. to 7 a.m.	55 50
S-94 and other commercial zones	7 a.m. to 10 p.m. 10 p.m. to 7 a.m.	60 55
M-50, M-52, and M-54	any time	70
S-82 and M-58	any time	70

Source: County of San Diego Noise Ordinance Section 36.404, 1981

The proposed residential development is zoned A-70 and is consistent with the surrounding residential land uses of the area. Thus, the operational noise standard would be 50.0 dBA Leq-h during the hours of 7 a.m. to 10 p.m. and 45.0 dBA Leq-h during the hours of 10 p.m. to 7 a.m.

County of San Diego General Plan Traffic Noise Regulations

Transportation noise levels and land use compatibility in the County of San Diego are governed under the Noise Element of the County's General Plan. Exterior noise standards are typically applied to areas within a proposed development that would be classified as "usable exterior space", such as rear and some side yards. The relevant sections of the Noise Element are cited below.

1. Whenever possible, development in San Diego County should be planned and constructed so that noise sensitive areas are not subject to noise levels in excess if 55 dBA CNEL.
2. Whenever it appears that new development will result in any (existing or future) noise sensitive areas being subjected to noise levels in excess of 60 dBA CNEL or greater, an acoustical study should be required.
3. If the acoustical study shows that noise levels at any noise sensitive areas will exceed 60 dBA CNEL, the development should not be approved unless the following findings are made:
   a) Modifications to the development have been or will be made which reduce the exterior noise level below 60 dBA CNEL; or,
   b) If, with the current noise abatement technology, it is infeasible to reduce the exterior CNEL to 60 dBA, then modifications to the development will be made which reduce interior noise below a CNEL equal to 45 dBA. Particular attention shall be given to noise sensitive interior spaces such as bedrooms; and,

c) If finding 'b' above is made, a further finding will be made that there are specifically identified overriding social or economic considerations which warrant approval of the development without modifications as described in 'a' above.

4) If the acoustical study shows that the noise levels at any noise sensitive areas will exceed 75 dBA CNEL; the development should not be approved.

5) Interior noise levels should not exceed 45 dBA CNEL within any habitable living space of any residential unit.

Additionally, in urbanized residential areas with an existing CNEL less than 60 decibels, the increase from the project is potentially significant whenever existing noise sensitive areas exceed 60 decibels CNEL. With an existing CNEL of 60 decibels or more, a net increase of 3 or more decibels CNEL due to the project would be considered as potentially significant.

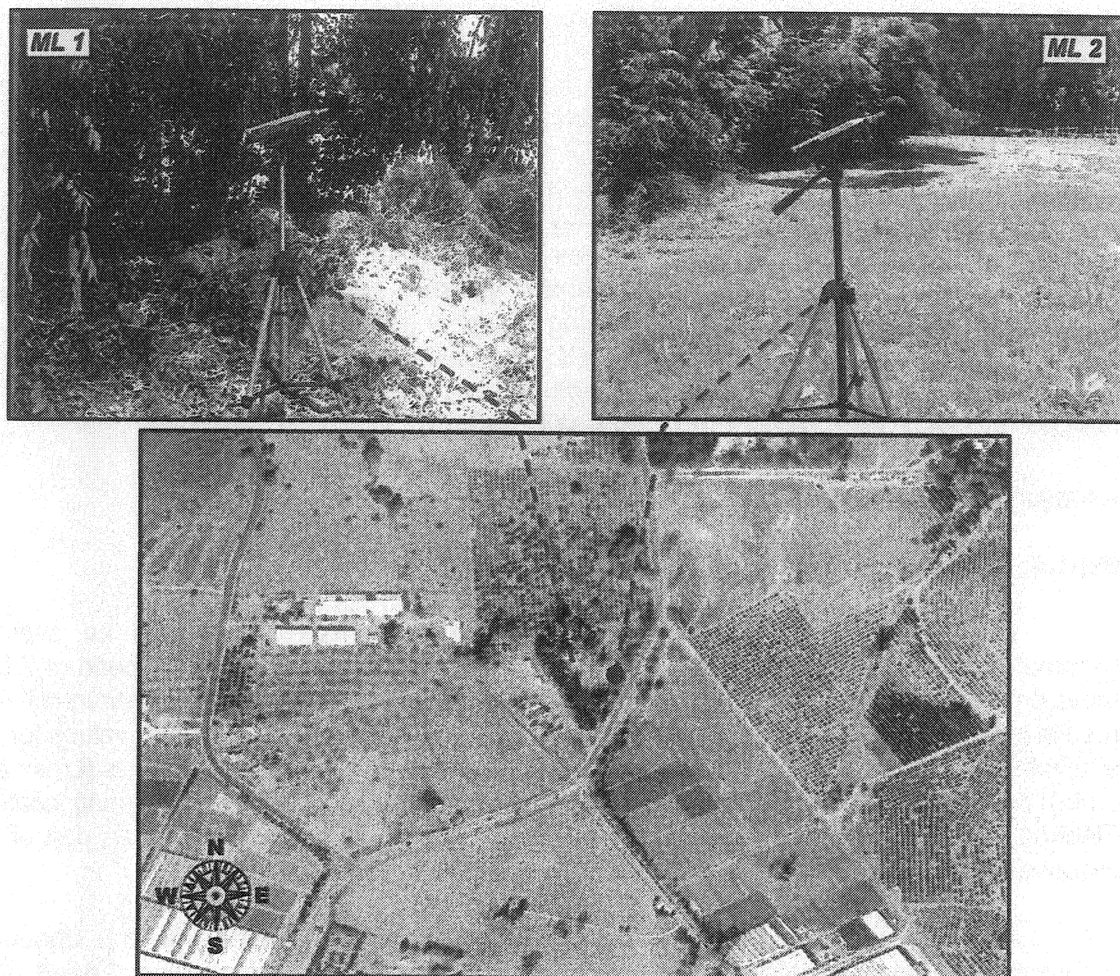
State of California CCR Title 24

The California Code of Regulations (CCR), Title 24, Noise Insulation Standards, states that multi-family dwellings, hotels, and motels located where the CNEL exceeds 60 dBA, must obtain an acoustical analysis showing that the proposed design will limit interior noise to less than 45 dBA CNEL. Interior noise standards are typically applied to sensitive areas within the structure where low noise levels are desirable (such as living rooms, dining rooms, bedrooms, and dens or studies). Worst-case noise levels, either existing or future, must be used for this determination. The County of San Diego has adopted the CCR Title 24 standards and includes them as part of the County's Noise Element of the General Plan. Thus, for the purposes of analysis, the applicable exterior noise design threshold is 60 dBA CNEL. The applicable interior noise standard is 45 dBA CNEL.

ANALYSIS METHODOLOGY

Site Monitoring Procedure

Two Quest Model 2900 ANSI Type 2 integrating sound level meters were used as the data collection devices. Both meters (denoted as ML 1 and ML 2) were mounted to tripods approximately five feet above the ground and were placed at opposite sides of the property having an existing worst-case noise exposure. Meter one, ML 1, was placed at the entrance of the project site. Meter two, ML 2, was placed next to the orchard on the east side of the site. This was done in order to capture the existing roadway noise levels and to determine project generated sound levels. The monitoring locations are shown graphically in Figures 4a and –b.



Figures 4a and -b: Ambient Noise Monitoring Location ML 1 and ML 2 (ISE, 7/05)

The measurements were performed on July 9, 2005 from 1:15 pm to 6:30 p.m. during a typical outdoor wedding ceremony at the facility. Noise measurements were taken in 30-minute increments to determine property line sound levels produced during this outdoor wedding event. All the equipment was calibrated before testing at ISE's acoustics and vibration laboratory to verify conformance with ANSI S1-4 1983 Type 2 and IEC 651 Type 2 standards.

Onsite Noise Assessment Approach

Onsite noise generation due to the proposed project would primarily consist of weekend weddings and similar type events. No fixed source noise generators or amplified music are proposed for this major use permit. Sources found to exceed the applicable standards identified in Table 1 would require appropriate mitigation measures.

Traffic Segment Impact Assessment Approach

The ISE *RoadNoise v2.0* traffic noise prediction model which is based upon Caltrans Sound 32 Traffic Noise Prediction Model with California (CALVENO) noise emission factors (based on FHWA RD-77-108 and FHWA/CA/TL-87/03 standards) was used to calculate the increase in vehicular traffic noise levels along major servicing roadways due to the proposed project. The model assumed a 'soft-site' propagation rule (i.e., 4.5 dBA loss per doubling of distance (DD) between source and receiver), thereby yielding a representative worst-case noise contour set. Traffic noise model input included a tabulation of the major servicing roadway alignments identified in the project traffic study (*Source: Traffic Study for Old Schoolhouse in the County of San Diego, Katz, Okitsu & Associates. 6/05*). ADT operations were assumed to follow a 95/3/2 mix flow pattern with observed or predicted traffic speeds.

FINDINGS / RECOMMENDATIONS

Existing Ambient / Project Noise Conditions

Testing conditions during the monitoring period were sunny with an average barometric pressure reading of 29.97 in-Hg, an average southwesterly wind speed of 7 to 8 miles per hour (MPH), and an approximate mean temperature of 85 degrees Fahrenheit. The results of the sound level monitoring are shown below in Tables 2a and -b. The values for the equivalent sound level (Leq), the maximum and minimum measured sound levels (Lmax and Lmin), and the statistical indicators L10, L50, and L90, are given for each monitoring location. Electronic amplification was used during this event but would not be allowed as part of the proposed major use permit.

Ambient Noise levels on site were found to be consistent with the observed community setting and topography. The value of the equivalent ambient sound level (Leq) for the project site ranged from approximately 56 to 61 dBA and was solely a function of adjacent traffic activities. The Leq did not significantly vary from the ambient during the entire wedding and reception events. Background noise levels (i.e., L90 noise levels) were found to be significantly lower than their energy equivalent counterparts (e.g., Leq) indicating the relative cyclic patterns of vehicular traffic on nearby roadways.

TABLE 2a: Measured Sound Levels (Location 1) – Old San Marcos Schoolhouse Site

		30-Minute Noise Level Descriptors in dBA			
Start Time	**Event**	**Leq**	**Lmax**	**L10**	**L90**
1:36	No special event activities (Ambient)	55.6	73.4	58.3	47.0
2:06	Employees setting up	55.0	65.9	58.3	46.0
2:36	Employees setting up	55.8	69.8	58.9	46.9
3:06	Employees setting up	56.2	68.9	58.9	49.0
3:36	Guest arriving	56.6	72.2	59.1	49.3
4:06	Guest getting seated	56.1	72.6	58.5	48.7
4:36	Wedding Ceremony	56.4	71.2	58.6	48.0
5:06	Guest left for outside reception area	56.0	73.9	58.8	47.6
5:36	Reception Dinner	55.8	71.9	58.8	48.0
6:06	Reception closing guest leaving	56.7	74.2	59.3	49.4

Monitoring Location:

- ML 1: Western portion of project site facing The Old San Marcos Schoolhouse. GPS 33° 11.251 x 117° 09.125. Meter located approximately 75' from the roadway.

Measurements performed by ISE on July 9, 2005. Estimated Position Error (EPE) for ML 1 = 15 feet and ML 2 = 26 feet.

TABLE 2b: Measured Sound Levels (Location 2) – Old San Marcos Schoolhouse Site

		30-Minute Noise Level Descriptors in dBA			
Start Time	**Start Time**	**Leq**	**Lmax**	**L10**	**L90**
1:43	No special event activities (Ambient)	61.2	73.3	65.5	44.9
2:13	Employees setting up	61.5	72.8	65.7	44.5
2:43	Employees setting up	61.8	77.6	66.0	46.0
3:13	Employees setting up	62.2	73.8	66.2	47.8
3:54	Guest arriving	62.1	78.4	66.0	47.4
4:24	Guest getting seated	62.3	77.1	65.9	47.8
4:54	Wedding Ceremony	62.6	84.3	66.2	46.9
5:24	Reception Dinner	62.3	77.8	66.4	47.3

Monitoring Location:

- ML 2: Eastern portion of project site facing The Old San Marcos Schoolhouse. GPS 33° 11.291 x 117° 09.089. Meter located approximately 150' from the roadway

Measurements performed by ISE on July 9, 2005. Estimated Position Error (EPE) for ML 1 = 15 feet and ML 2 = 26 feet.

Predicted Onsite Noise Levels

Onsite noise generation from the Old San Marcos Schoolhouse project would primarily consist of outdoor wedding ceremonies / parties. These events would not use any electronic amplification (i.e. public address systems or speakers) at any outdoor locations onsite. The monitored wedding event as shown in Table 1a and –b above was consistent with the proposed use of the facility and was not found to produce noise levels above the existing ambient noise environment. Additionally, the project does not propose any fixed source noise generators nor proposes any outdoor electronic noise amplifying devices in the future. Therefore, the project would be considered below the threshold of significance and would not be considered impactive under the County's noise ordinance. All parties requiring the use of electronic amplification will be exclusively held indoors.

Future Traffic Segment Impacts

The results showing the effect of traffic noise increases on the various servicing roadway segments associated with the proposed Old San Marcos Schoolhouse major use permit development are presented in Tables 3a through –c for the following scenarios:

Table 3a) Existing Conditions
Table 3b) Forecast plus Project Conditions
Table 3c) Traffic Noise Increase

TABLE 3a: Existing Conditions – Old San Marcos Schoolhouse

Roadway Segment Name	Volume (ADT)	Vehicle Speed (MPH)	SPL at 50 feet	Distance to 65 dBA CNEL Contour	Distance to 60 dBA CNEL Contour
North Twin Oaks Valley Road between E. Olive Street and Buena Creek Road.	10,984	50	70.8	123	264
Deer Springs Road/North Twin Oaks Valley Road between Buena Creek Road and Sycamore Drive.	10,242	50	70.5	117	252
Deer Springs Road between Sycamore Drive and Project Site.	10,662	50	70.7	120	259
Deer Springs Road between Project site and Sarver Lane.	10,664	50	70.7	120	259

Notes:

- Peak Hour Volume - Source: Traffic Impact Assessment – KOA, 6/05
- All values given in dBA CNEL. Contours assumed to be line-of-sight perpendicular (⊥) distance.

TABLE 3b: Forecast plus Project Conditions – Old San Marcos Schoolhouse

Roadway Segment Name	Volume (ADT)	Vehicle Speed (MPH)	SPL at 50 feet	Distance to 65 dBA CNEL Contour	Distance to 60 dBA CNEL Contour
North Twin Oaks Valley Road between E. Olive Street and Buena Creek Road.	11,116	50	70.9	124	266
Deer Springs Road/North Twin Oaks Valley Road between Buena Creek Road and Sycamore Drive.	10,388	50	70.6	118	255
Deer Springs Road between Sycamore Drive and Project Site.	10,808	50	70.8	121	261
Deer Springs Road between Project site and Sarver Lane.	10,810	50	70.8	121	261

Notes:
- Peak Hour Volume - Source: Traffic Impact Assessment – KOA, 6/05
- All values given in dBA CNEL. Contours assumed to be line-of-sight perpendicular (⊥) distance.

TABLE 3c: Project Related Traffic Noise Increase

Roadway Segment Name	Existing (SPL)	Existing plus Project (SPL)	Project Related Difference (SPL)
North Twin Oaks Valley Road between E. Olive Street and Buena Creek Road.	70.8	70.9	0.1
Deer Springs Road/North Twin Oaks Valley Road between Buena Creek Road and Sycamore Drive.	70.5	70.6	0.1
Deer Springs Road between Sycamore Drive and Project Site.	70.7	70.8	0.1
Deer Springs Road between Project site and Sarver Lane.	70.7	70.8	0.1

Notes: All values given in dBA CNEL. Contours assumed to be line-of-sight perpendicular (⊥) distance.

For each roadway segment examined, the worst case average daily traffic volume (ADT) and observed/predicted speeds are shown along with the corresponding reference noise level at 50-feet (in dBA). Additionally, the line-of-sight distance to the 60 and 65 dBA CNEL contours are provided as an indication of the worst-case theoretical traffic noise contour placement.

As can be seen from the traffic data, the project-related noise increase would occur along near the project vicinity. The worst-case increase would be 0.1 dBA CNEL, which is below the 3.0-dBA significance thresholds. Therefore, no impacts are expected.

Should you have any questions regarding the above conclusions, please do not hesitate to contact me at (858) 451-3505.

Sincerely,

Rick Tavares, Ph.D.
Project Principal
Investigative Science and Engineering, Inc.

Cc: Ryan Taylor, ISE